

Report Part Title: Greening As a Tool in Climate Planning

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Report Author(s): James J.T. Connolly, Isabelle Anguelovski and Emilia Oscilowicz

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Anacostia River waterfront park – Washington DC, a park under redevelopment in the historically segregated neighborhood of Anacostia
(Alberto Bougleux and Barcelona Lab for Urban Environmental Justice and Sustainability, 2021)

Greening As a Tool in Climate Planning

Urban greening is a tool for climate planning in the sense that it embodies efforts to reduce the ecological impacts of urban development, and, in the process, to mitigate and adapt to climate change. Urban greening has been operationalized in the literature in a number of ways, ranging from generalized and comprehensive definitions to narrow and specialized uses of the term. On the one hand, urban greening has been understood broadly as “a proliferation of urban quality of life and environmental sustainability initiatives” (Angelo 2019), including actions linked to green energy and sustainable transport planning. On the other hand, urban greening has also been used more specifically to refer to concrete elements of the built environment, such as physical urban green spaces including parks, gardens, greenways, playgrounds, green roofs, urban canopies, farmers' markets, LEED certified buildings, and other physical climate resilient infrastructure (Angelo 2019; De Sousa 2014; Du and Zhang 2020). In environmental, conservation, and ecology discourses, green climate interventions often fall into the wider category of nature-based solutions (NBS), which propose ways of solving problems that leverage any aspect of nature (Escobedo et al. 2019; Kotsila et al. 2020). NBS often manifest as green infrastructure (GI) and are underpinned by growing public and funding interests around the multi-functionality of urban greening (Kotsila et al 2020).

In this report, we mostly use the **generalized definition of urban greening**, although we largely leave aside energy and transport initiatives to focus more specifically on the findings around green infrastructure. Unless stated otherwise, when we say urban greening, we refer to the notion of general reductions in ecological impact from urban development that result in improvements to urban sustainability and quality of life, and support climate mitigation and adaptation. Yet, we do also utilize research results that are rooted in a more specific meaning of urban greening as a reference to a given element of the built environment. Thus, in this report, we mostly use an inclusive definition of urban greening but shift sometimes to a more specific understanding of the term, indicating when we do so.

Research has demonstrated that **urban greening, understood broadly, has important environmental and ecological benefits, while also servicing significant health and well-being, social, and cultural co-benefits** (Dadvand et al. 2018; Gascon et al. 2015; D. Kim and Song 2019; Triguero-Mas et al. 2015; Veerkamp et al. 2021). Of the environmental and ecological benefits, often referred to as ecosystem services, urban greening has been demonstrated to improve urban air quality, urban water quality, heat regulation, noise reduction, flooding and rainwater drainage, water supply, wastewater treatment, carbon sequestration, and more (Bellezoni et al. 2021; Breuste et al. 2013; Collier et al. 2023; Jayasooriya et al. 2017; Lazaro et al. 2022; L. Rice 2020; Wamsler et al. 2020). Urban greening provides critical physical health benefits by promoting physical activity as well as mental health benefits by reducing stress and anxiety, improving sleep and quality of life, and providing opportunity for social inclusion and community ties (Cohen-Cline, Turkheimer, and Duncan 2015; Coventry et al. 2019; Fisher, Svendsen, and Connolly 2015; Lee and Maheswaran 2011; Triguero-Mas et al. 2015).

Urban greening is also known to provide social services, such as enhanced sense of community, communication, place, belonging, and identity (Anguelovski 2014; Hosseini et al. 2021; Loder 2020; Oscilowicz et al. 2020; Planas-Carbonell et al. 2023; Raymond, Stedman, and Frantzeskaki 2023; K. M. Smith 2011). Additionally, urban greening has demonstrated its role in enriching cultural services and values, including offering space for recreational and creative opportunities, landscapes of culture-specific beauty, and intellectual reprieve (Kosanic and Petzold 2020; Nesbitt et al. 2017; Riechers, Barkmann, and Tschardt 2018). Green spaces are particularly important resources and refuges for women (Calderon-Agelich et al. 2023) and minorities and immigrants due to their public nature and opportunity for social encounter particularly when in close proximity to homes, even though those groups often report safety and trust concerns and experiences of gender, ethno-racial, and nativist exclusion in green areas (Fernández Nuñez 2022a, b, Mullenbach et al. 2021, Byrne 2012).

Climate change experts including the Intergovernmental Panel on Climate Change (IPCC) recognize the population benefits and environmental services of urban greening and urban green spaces, calling for standardizations and prioritization of both in planning practice as critical adaptation and mitigation tools for addressing climate change (Ali et al. 2022). Moreover, planners commonly recognize that urban greening and urban green spaces could serve as an actual solution to climate vulnerability and environmental degradation while supporting a community's sense of place and improving livability (Meerow, 2020, Meerow and Keith, 2022). Yet, it is also commonly

understood that urban greening within climate mitigation and adaptation is not ‘neutral’ and instead is accessed, developed, and implemented inequitably (Shokry et al, 2020).

A legacy of inequity underlies the effects of urban green planning and stems from discriminatory housing and race-based, segregation-driven land use policies such as those that led to the location of low-income, racial/ethnic minorities in undesirable areas near landfills, highways, or industrial sites while simultaneously positioning high profile urban green spaces in whiter, higher-income neighborhoods (Anguelovski, Ranganathan, and Hyra 2021; Connolly and Anguelovski 2021; Klompmaker et al. 2023; Alessandro Rigolon and Németh 2021). The US specifically is characterized by concurrent residential segregation and unequal historic investment in parks, recreational areas, and tree planting – and their maintenance – in minority neighborhoods (Connolly and Anguelovski 2021).

Recognizing this legacy of racism in planning practice and unequal access to greening for lower-income and minority neighborhoods, many municipalities and nonprofits have shifted their lens of focus to consider the racial and social context in comprehensive plans with the aim of prioritizing equity in comprehensive (green) planning (Chu and Cannon 2021; Schrock, Bassett, and Green 2015). For example, many cities have sought to ensure that all residents are within a short walk of a public green space and some cities have worked to bring funding equity across green spaces. Los Angeles is one such example, where planners are building on an existing greenspace (in)equity index to support funding prioritization and “close the equity gap in access to open space” (National Recreation and Park Association 2022).

Despite this cultural and professional shift toward inclusivity and equity when implementing urban greening, **low-income, racialized and vulnerable residents still face compounded challenges whereby urban greening and green spaces remain inaccessible in many neighborhoods across the US**, as pointed out by diverse public and nonprofit studies (National Recreation and Park Association 2022; ParkScore® Scoring Metrics 2022) while (re)developed urban green spaces and amenities are eliciting new mechanisms of inequity through displacement and exclusion through green gentrification. While planners aim to provide the social and environmental benefits known to be associated with urban greening and green space, green gentrification and the observed and potential green displacement that follows challenge this ideal. Today’s planners in practice are now recognizing this new paradigm, for which scholars and researchers aim to provide the knowledge and tools that can deliver proactive remediation and just, inclusive solutions.



Cully Neighborhood Community-developed Park – Cully Park, Portland, Oregon
(Alberto Bougleux and Barcelona Lab for Urban Environmental Justice and Sustainability, 2021)

What Have We Learned about Greening and Gentrification?

What is gentrification and when did greening become involved?

Gentrification has been defined as a process in which the **influx of capital transforms an urban neighborhood socially, economically, culturally, physically, and demographically** (Brown-Saracino 2009; Curran 2004; Davidson 2007; Fullilove 1996). The term gentrification first appeared in the literature following an ethnographic study of displacement of the working-class by the middle-class in London (Glass 1964). Since then, scholars have identified many forms and processes of gentrification, which share common outcomes of landscape change, social upgrade by high-income in-movers, and displacement of low-income groups.

Green gentrification is a subset within the broader dynamics of environmental and green injustices, which can be traced back to the American environmental justice movement from the 1980s through the 2000s. During that time, scholars and activists gave a name to environmental racism, thereby recognizing the inequitable distributions of toxic sites and hazardous land uses on people of color across the country (Bullard 1994; Chavis and Lee 1987) and calling for the consideration of race, ethnicity, and socioeconomic power in sustainability practices (Agyeman